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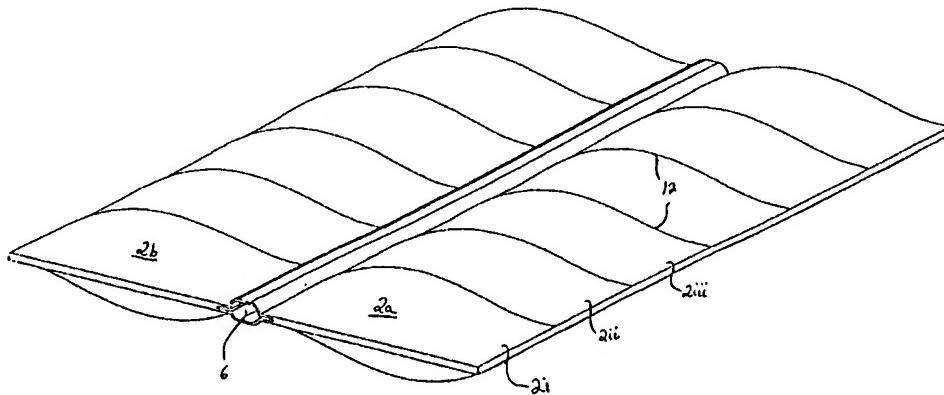
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(54) Title: INFLATABLE PACKAGING MATERIAL



(57) Abstract: An inflatable packaging material comprised of two plastic sheets pre-welded to one another in a predetermined pattern so as to form a row of inflatable air chamber pairs, and characterized by having at least one central air-injection passage extending along the length of the packaging material and in between each of the air chambers in an air chamber pair, wherein each air chamber communicates with said at least one air-injection passage through small openings in the welding such that said air chamber pairs can be inflated and said small openings welded closed by the user to provide packaging material of the desired length. The invention additionally relates to a method for the production of inflated packaging material.

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## INFLATABLE PACKAGING MATERIAL

### FIELD OF THE INVENTION

The present invention relates to inflatable packaging material. More specifically, the present invention relates to inflatable packaging material that is pre-welded in a particular pattern such that the packaging material can be manufactured and distributed in a compact and easily-stored form, and subsequently inflated and completely sealed using a specialized table-top device to provide reliable and easily-disposed packaging material.

### BACKGROUND OF THE INVENTION

It is known in the art to provide air-filled shock-absorbent packaging material to ensure that manufactured products do not get damaged while they are being shipped or transferred from one place to another. Though air-inflated material provides a very reliable means for safe packaging, air-inflated material occupies a large amount of space in storage, transportation, and disposal. It would therefore be desirable to produce an air-filled packaging material that had all the advantages of conventionally used air-filled packaging material but that could be prepared and distributed in a convenient and efficient manner.

It is therefore the primary object of the present invention to provide pre-welded inflatable packaging material that can be manufactured and distributed in a convenient and efficient form and that can be subsequently inflated and completely sealed by the user (using a specialized table-top device), and deflated by the end consumer.

### SUMMARY OF THE INVENTION

The present invention relates to inflatable packaging material comprised of two plastic sheets pre-welded to one another in a predetermined pattern so as to form a row of inflatable air chamber pairs (in the context of the present invention, the term "sheet" is meant to imply any sheet, film, or other thin layer). The packaging material is characterized by having at least one central air-injection passage

extending along the length of the packaging material and in between each of the air chambers in an air chamber pair. Each air chamber communicates with the air-injection passage through small openings in the welding such that the air chamber pairs can be inflated and the small openings welded closed by the user (using a specialized table-top device) to provide packaging material of the desired length. It is appreciated that in the context of the present invention, the term "air chamber pairs" may refer to two air chambers side-by-side, or additionally, to any number of air chambers positioned in a side-by-side manner, such as a "triplet" or "quadruplet" of air chambers. In any one of these cases, at least one air-injection passage extends along the length of the packaging material in between the air chambers such that all the air chambers in an air chamber "pair" may be inflated.

The present invention also relates to inflatable packaging material as described above, but being comprised of one plastic sheet folded on itself to form a double layer of plastic (in place of two plastic sheets).

In one preferred embodiment of the present invention, the small openings in the welding are located at equal and aligned increments along the welding. In this manner, in any given air chamber pair, the two small openings leading to each individual air chamber are exactly opposite from one another and the two air chambers in an air chamber pair can be inflated in a substantially simultaneous manner.

In another preferred embodiment, the small openings in the welding are located at equal and displaced increments along the welding. In this manner, the two air chambers in an air chamber pair filled are inflated one after the other.

In other preferred embodiments of the present invention, there are perforations formed between the air chamber pairs, such that the length of the packaging material can be determined by the user (the user can tear the perforations in the packaging material after the desired length of air chambers pairs have been dispensed and inflated.)

In other preferred embodiments of the present invention, there are perforations formed between the air chambers of an air chamber pair (i.e., longitudinally, along the central air injection passage) such that the user may have the option of using only one side of the air chambers in an air chamber pair at a time.

Preferably, the packaging material of the present invention is adapted to be dispensed from a dispensing roll. Moreover, the packaging material is preferably dispensed from inside a cartridge. In this manner, the user can receive the packaging material from the manufacturer in a convenient and easily-dispensed form. The user can dispense, inflate, and completely seal (so that the air chambers are air-tight) the desired length of packaging material for use in packaging computer parts, fragile products, or any other item that needs to be packaged. When the end-consumer needs to dispose of the packaging material, the air chambers can be deflated so that the volume and size of the packaging material is significantly reduced.

It should be appreciated that air chambers can be manufactured to have a range of sizes, allowing for varying widths and lengths of the packaging material. The actual length of the packaging material is determined by the user, according to the packaging needs.

The present invention also relates to a method for the production of inflated packaging material, using the inflatable packaging material herein described, comprising the steps of:

- (a) inserting an air-injector through the central air injection passage;
- (b) inflating an air chamber pair;
- (c) welding closed the two small openings in the welding that communicate between the air injection passage and the air chamber pair;
- (d) repeating steps (b) and (c) until the desired length of inflated packaging material is achieved;

- (e) separating the packaging material that has been inflated from the remainder of the roll.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

Figure 1 is an isometric view of a preferred embodiment of the present invention, with the air chambers inflated.

Figure 2 is a top-plan view of a preferred embodiment of the present invention, shown before the air chambers have been inflated, in which the small openings in the welding are positioned exactly opposite from one another.

Figure 3 is a top-plan view of a preferred embodiment of the present invention, shown before the air chambers have been inflated, in which the small openings in the welding are positioned diagonally from one another.

Figure 4A illustrates a cross-sectional side view of a preferred embodiment of the present invention in which the packaging material is comprised of two plastic sheets. Figure 4B illustrates a cross-sectional side view of a preferred embodiment of the present invention in which the packaging material is comprised of one plastic sheet, folded over itself to form a double layer of plastic.

#### DETAILED DESCRIPTION OF THE DRAWINGS

It should be appreciated that the detailed description that follows is intended only to illustrate preferred embodiments of the present invention. It is in no way intended to limit the scope of the invention, as set out in the claims.

Referring now to Figure 1, the inflatable packaging material is pre-welded by the manufacturer so as to form a row of air chamber pairs (2i) (2ii) (2iii) (etc.) Each air chamber pair is comprised of two air chambers situated next to one another (for example, 2a and 2b) and separated by a longitudinally-extending air-injection

passage (6). (The welding pattern between the two air chambers in an air chamber pair can be seen clearly in Figures 2 and 3.) Lateral welding (12) serves to separate the air chamber pairs from one another. It should be appreciated that the row of air chamber pairs can extend to any length that is desired, and need not be limited only to six air chamber pairs (as is illustrated in Figure 1).

Referring now to Figure 2, the packaging material is preferably dispensed from a dispensing roll (5). Central air-injection passage (6) communicates with the air chambers through a series of small openings (10) in the welding. As can be seen from the enlarged circular section of the Figure 2, the small openings in the welding may be positioned exactly opposite from one another to enable the two air chambers in an air chamber pair to be inflated in a substantially simultaneous manner. It should be appreciated that the air chambers may be substantially rectangular, as shown in Figure 1, or they may have any other appropriate shape. For example, in certain preferred embodiments the side of an air chamber that is adjacent to the air-injection passage may be angled with respect to the air-injection passage, such that, when inserted, an air-injector is guided in a straight manner through the air-injection passage.

In the preferred embodiment illustrated in Figure 3, the small openings (10) in the welding are positioned diagonally from one another (in contrast to the preferred embodiment in Figure 2). This allows each individual air chamber in an air chamber pair to have a higher internal pressure through the usage of a minimal compressor.

It should be appreciated that the packaging material is designed to be inflated and completely sealed (that is, sealing closed the small openings in the welding) by a table-top device that can be purchased by the user. As the packaging material is advanced through the table-top device, each successive air chamber pair is inflated and then completely sealed one by one. When the desired length is achieved, the inflated packaging material is separated from the remainder of the roll. In this manner, the packaging material can be inflated on an as-needed basis, so that little

storage space is occupied and so that safely packaging goods becomes a more easily-performed and convenient task.

Referring now to Figures 4A and 4B, the packaging material of the present invention may be comprised of two plastic sheets, or of one plastic sheet, folded over on itself so as to form a double layer of plastic. As shown in Figure 4A, two plastic sheets (8a) (8b) are welded together in four longitudinal regions (20) (21) (22) (23) to produce the central air-injection passage (6) and the air chambers (2a) (2b) of air chamber pair (2). As shown in Figure 4B, when only one plastic sheet (8) is used, the plastic sheet (8) is folded and welded only at longitudinal regions (21) (22) to produce the air chambers (2a) (2b) and the air-injection passage (6) (note overlapping region (30) where the ends of the plastic sheet are rejoined). It should be noted that the lateral weldings, referred to in Figure 2, are not visible in Figure 4.

CLAIMS

1. Inflatable packaging material comprised of two plastic sheets pre-welded to one another in a predetermined pattern so as to form a row of inflatable air chamber pairs, and characterized by having at least one central air-injection passage extending along the length of the packaging material and in between each of the air chambers in an air chamber pair, wherein each air chamber communicates with said at least one air-injection passage through small openings in the welding such that said air chamber pairs can be inflated and said small openings welded closed by the user to provide packaging material of the desired length.
2. Inflatable packaging material comprised of one plastic sheet folded on itself to form a double layer of plastic and welded in a predetermined pattern so as to form a row of inflatable air chamber pairs, and characterized by having a central air-injection passage extending along the length of the packaging material and in between each of the air chambers in an air chamber pair, wherein each air chamber communicates with the air-injection passage through small openings in the welding such that said air chamber pairs can be inflated and said small openings welded closed by the user to provide packaging material of the desired length.
3. Inflatable packaging material according to claim 1 or 2 wherein the small openings in the welding are located at equal and aligned increments along the welding such that in an air chamber pair, the two small openings leading to each individual air chamber are exactly opposite from one another and the two air chambers in an air chamber pair can be inflated in a simultaneous manner.
4. Inflatable packaging material according to claim 1 or 2 wherein the small openings in the welding are located at equal and displaced increments along the welding such that the two air chambers in an air chamber pair filled can be inflated one after the other.

5. Inflatable packaging material according to claim 1 or 2 having perforations formed between the air chamber pairs, such that the length of the packaging material can be determined by the user.
6. Inflatable packaging material according to claim 1 or 2 adapted to be dispensed from a dispensing roll.
7. Inflatable packaging material according to claim 1 or 2 adapted to be dispensed from inside a cartridge.
8. A method for the production of inflated packaging material, using the inflatable packaging material described in any one of the preceding claims, comprising the steps of:
  - (a) inserting an air-injector through the central air injection passage;
  - (b) inflating an air chamber pair;
  - (c) welding closed the two small openings in the welding that communicate between said air injection passage and said air chamber pair;
  - (d) repeating steps (b) and (c) until the desired length of inflated packaging material is achieved;
  - (e) separating the packaging material that has been inflated from the remainder of the roll.

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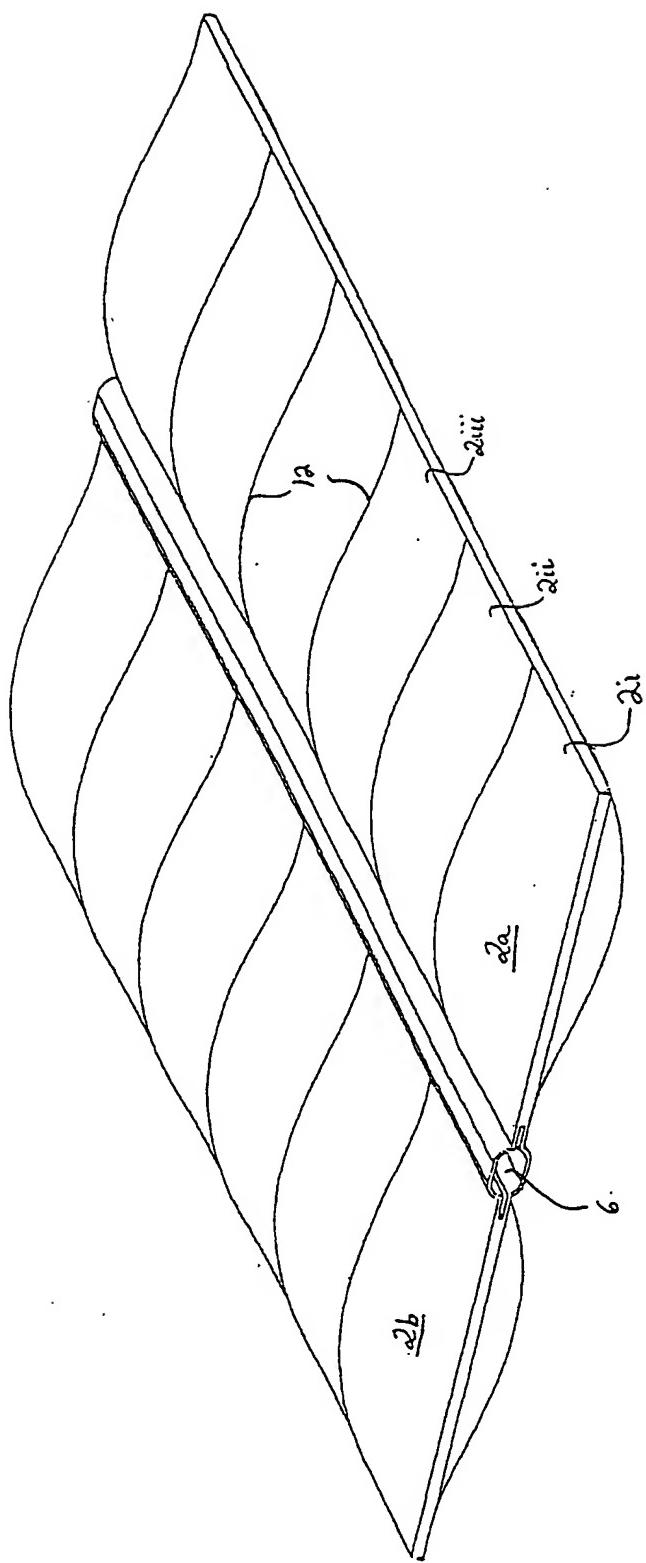


FIGURE 1

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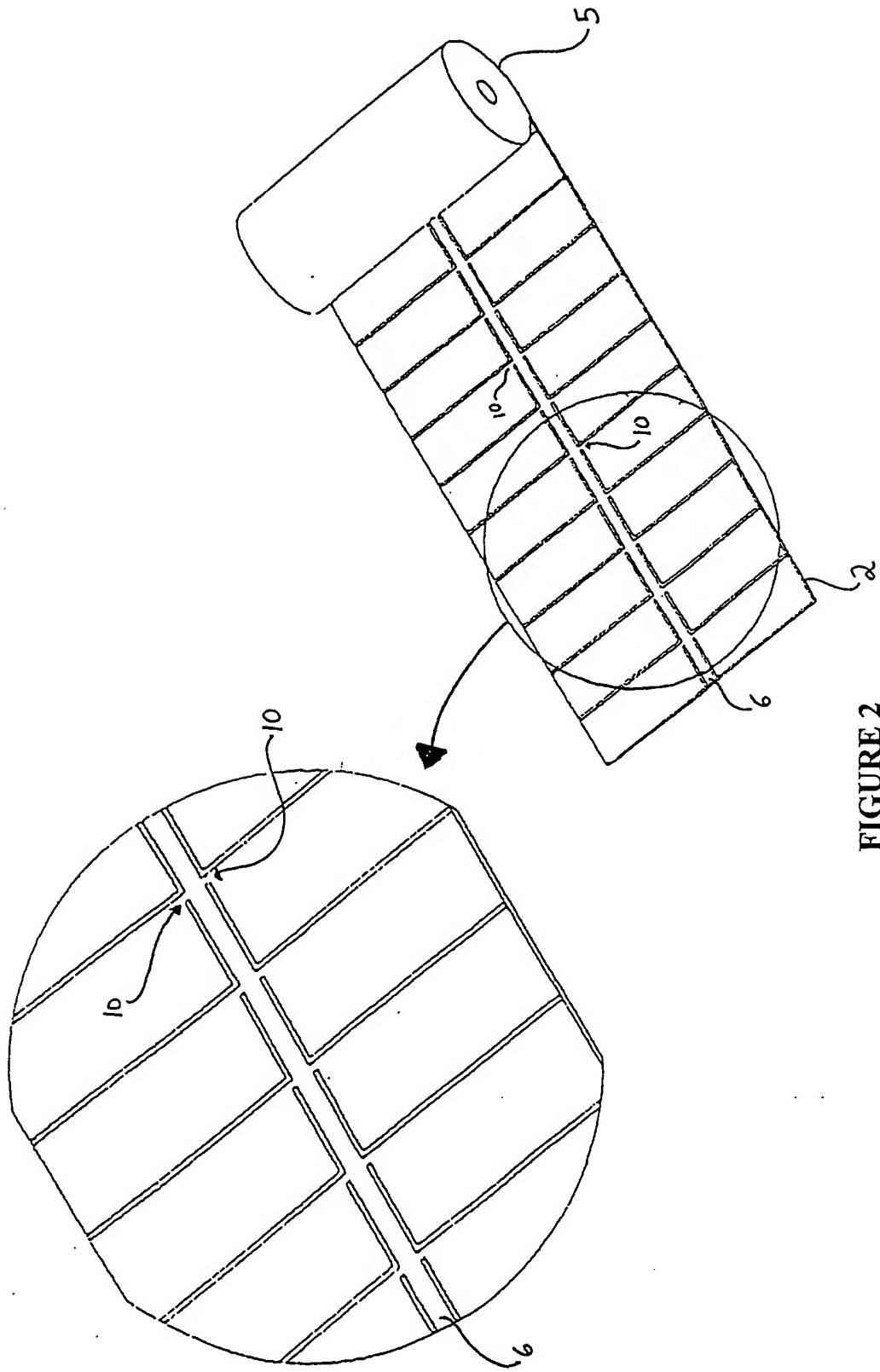


FIGURE 2

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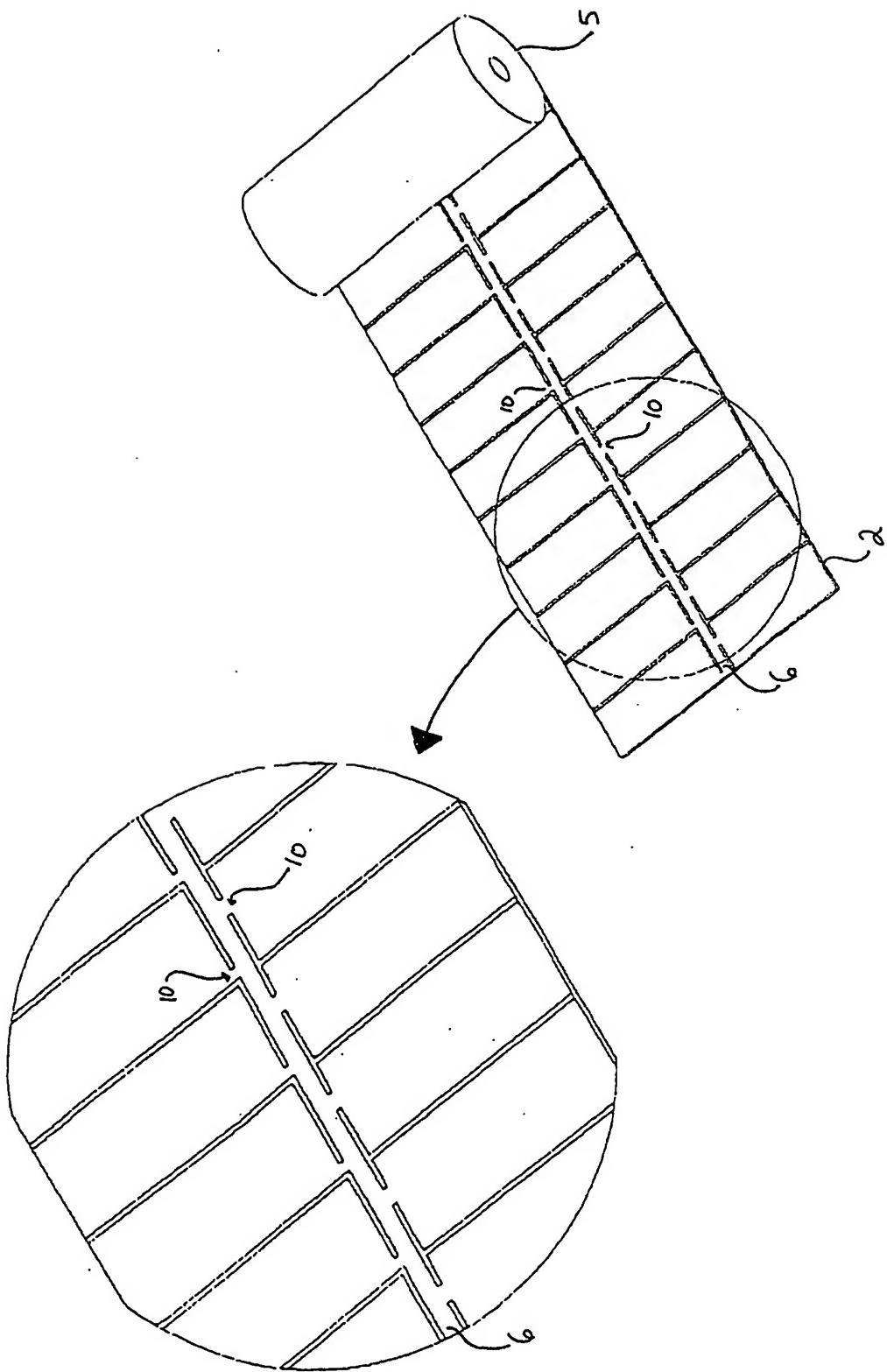


FIGURE 3

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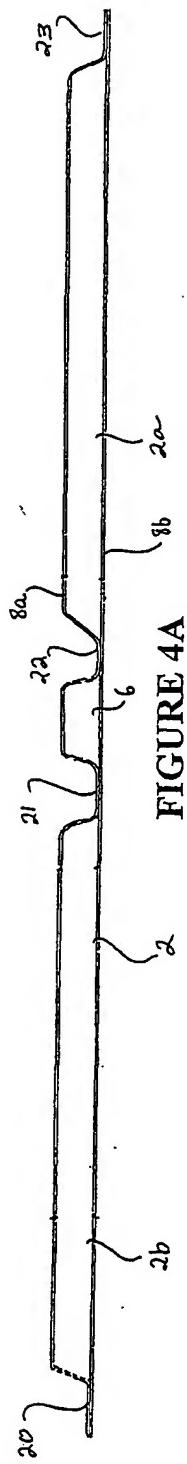


FIGURE 4A

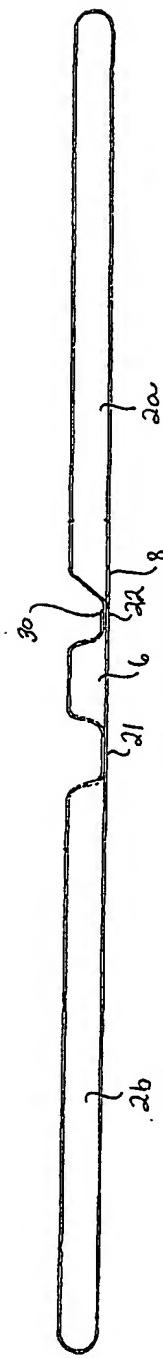


FIGURE 4B